

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
15 September 2005 (15.09.2005)

PCT

(10) International Publication Number
WO 2005/084378 A3

(51) International Patent Classification:
G02B 6/26 (2006.01) *H01L 31/00* (2006.01)
H01M 12/00 (2006.01)

(74) Agents: **GARSSON, Ross, Spencer et al.**; Winstead Sechrest & Minick P.C., P.O. Box 50784, Dallas, TX 75201-0784 (US).

(21) International Application Number:
PCT/US2005/007084

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date: 4 March 2005 (04.03.2005)

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SI, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(25) Filing Language: English

(26) Publication Language: English

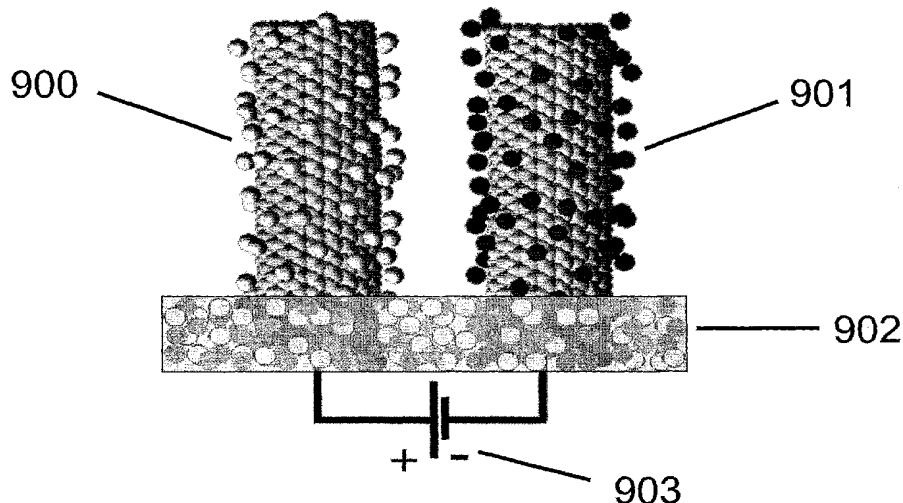
(30) Priority Data:
60/550,289 5 March 2004 (05.03.2004) US

Published:

— with international search report

[Continued on next page]

(54) Title: MATERIAL AND DEVICE PROPERTIES MODIFICATION BY ELECTROCHEMICAL CHARGE INJECTION IN THE ABSENCE OF CONTACTING ELECTROLYTE FOR EITHER LOCAL SPATIAL OR FINAL STATES



(57) **Abstract:** In some embodiments, the present invention is directed to processes for the combination of injecting charge in a material electrochemically via non-faradaic (double-layer) charging, and retaining this charge and associated desirable properties changes when the electrolyte is removed. The present invention is also directed to compositions and applications using material property changes that are induced electrochemically by double-layer charging and retained during subsequent electrolyte removal. In some embodiments, the present invention provides reversible processes for electrochemically injecting charge into material that is not in direct contact with an electrolyte. Additionally, in some embodiments, the present invention is directed to devices and other material applications that use properties changes resulting from reversible electrochemical charge injection in the absence of an electrolyte.



— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(15) Information about Correction:

Previous Correction:

see PCT Gazette No. 48/2005 of 1 December 2005

(88) Date of publication of the international search report:

1 June 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.